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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/511,546

10/18/2004

Hiroshige Deguchi

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EXAMINER

TURNER, KATHERINE ANN

ART UNIT

PAPER NUMBER

4132

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/511,546	Applicant(s) DEGUCHI ET AL.	
	Examiner Katherine Turner	Art Unit 4132	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-5 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 October 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>10/18/2004</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1-5 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

As to claim 1, it is unclear what parameters fall under the categories of external and internal as defined by Applicant in claim 1. One cannot ascertain the metes and bounds of the claim, because one cannot determine what the designer can design and cannot choose voluntarily as this is subjective. Applicant may want to amend claim 1 to define what specific parameters are external and internal.

As to claims 2-3, it is unclear if Applicant is further limiting the redox flow battery system to include two batteries. In both claims 2 and 3 two types of battery outputs are described; one is the "output of battery for smoothing" and the other is a "specified output of the battery." One cannot ascertain the metes and bounds of the claim, because one cannot determine if there is one or two batteries supplying outputs. Applicant may want to amend claims 2 and 3 to clarify if these battery outputs are from

the same battery. For action on the merits, the examiner has taken these claims to comprise only one redox flow battery.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. Claims 1 - 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hasegawa et al. (US 2001/0012211) in view of Oga et al. (JP 2000-073932, cited in IDS, refer to on-line translation) and Clarke et al. (WO 03/017407).

As to claims 1-3, Hasegawa et al. teaches a method of designing a rechargeable battery system comprising a rechargeable battery, comprising the steps of:

- determining active power and reactive power (applicant's external parameter given by an operating condition of the battery a designer cannot choose voluntarily), which are output from the rechargeable battery system, which is for smoothing an output of power generation

of generating equipment that varies irregularly in output of power generation ([0011]; [0012]),

- determining the output from the rechargeable battery system, comprising the rechargeable battery and DC/AC converter (applicant's internal parameter given by a design condition of the battery the designer can design voluntarily) ([0012], lines 4-12; [0014], lines 1-7; [0035], lines 7-11; [0040], lines 2-5),

Hasegawa et al. teaches determining/basing the output from the rechargeable battery system including the rechargeable battery and converter, by detecting a difference between the current state and an active power and reactive power that should be held ([0012], lines 4-12; [0014], lines 1-7; [0035], lines 7-11; [0040], lines 2-5), but is silent as to utilizing averages and standard deviations to detect the difference and basing the active power and reactive power that should be held on the standard deviation.

Oga et al. teaches determining an average value of variables of the generator output (applicant's external parameter) and standard deviation ([0014], lines 1-7), and determining an optimum value of the battery capacity (applicant's internal parameter) based on the standard deviation ([0014], lines 1-7). Oga et al. also teaches that the standard deviation value is used in determining the optimum value of electric power, with a range of 1-2 times the standard deviation ([0014], lines 14-15; [0016], lines 1-4). Oga et al. teaches that utilizing this means of detecting the optimum value of electric power alleviates the concern for irregular power supply due to wind speed, which is the

irregular power supply that is being leveled ([0015]). Hasegawa et al. also teaches leveling the power fluctuation of wind power due to weather conditions (like wind speed) ([0005], lines 1-3; [0011]; [0012]).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize Oga et al.'s method of determining averages and standard deviations for Hasegawa et al.'s active power and reactive power to determine the difference between Hasegawa et al.'s current state and an optimum active power and reactive power, and to base Hasegawa et al.'s active power and reactive power that should be held on Oga et al.'s standard deviation value, because it alleviates the concern about the irregular power supply as taught by Oga et al. ([0015]).

Hasegawa et al. teaches a rechargeable battery is a load leveling battery, but is silent as to this rechargeable battery being a redox flow battery to force electrolytic solution to be fed to and discharged from its cells ([0011]).

Clarke et al. teaches a rechargeable cerium zinc redox flow battery to force electrolytic solution to be fed to and discharged from its cells, which is a load leveling battery (figure 1; abstract; page 8, lines 12-22; page 9, lines 1-7). Clarke et al. teaches that this batteries capacity is particularly useful as a load leveling battery since its capacity is only limited by the supply of electrolyte (page 7, lines 3-6), and that it is significantly less problematic with regard to the environment and health of operators/manufacturers than numerous alternative known load leveling batteries (page 7, lines 12-14).

It would have been obvious for one of ordinary skill in the art the time the invention was made to utilize Clarke et al.'s rechargeable redox flow battery as Hasegawa et al.'s rechargeable battery, because it is particularly useful as a load leveling battery since its capacity is only limited by the supply of electrolyte, and because of the low levels of problems with regard to the environment and health of operators/manufacturers as taught by Clarke et al. (page 7, lines 3-6 and lines 12-14).

Regarding claims 4-5, Hasegawa et al. in view of Oga et al. teaches basing Hasegawa et al.'s active power and reactive power, which is the output from the rechargeable battery system, the combined system of the specified output of the rechargeable battery and the specified output of the AC/DC converter ([0012], lines 4-12; [0014], lines 1-7; [0035], lines 7-11; [0040], lines 2-5), on Oga et al.'s standard deviation value range of 1-2 times the standard deviation of the generated output ([0014], lines 14-15), but does not disclose the range of the specified output of the AC/DC converter and the specified output of the battery separately because it is a combined system.

Oga et al. teaches basing the battery capacity on a standard deviation value range of 1-2 times the standard deviation of the generated output ([0014], lines 14-15), and that utilizing this method alleviates the concern about the irregular power supply, i.e. wind speed, as taught by Oga et al. ([0015]). The battery capacity is directly related to the battery output, which is directly related to the AC/DC converter output. Therefore, basing the specified battery output and the specified AC/DC converter output on the

Art Unit: 4132

range of 1-2 times the standard deviation of the generated output would also alleviate concerns about the irregular power supply.

It would have been obvious to one of ordinary skill in the art to base the specified output of either the AC/DC converter or the battery or both on a range of 1-2 times the standard deviation of the generated output depending on the output capability of each component, because it would alleviate concerns about the irregular power supply ([0015]).

Correspondence/Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Katherine Turner whose telephone number is (571)270-5314. The examiner can normally be reached on Monday through Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jessica Ward can be reached on (571)272-1223. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 4132

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/K. T./

Examiner, Art Unit 4132

/Jessica L. Ward/

Supervisory Patent Examiner, Art Unit 4132